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Please enter the attached 12 page document into the below-identified file,  
and then please forward the file to Examiner Jezia Riley in Art Unit 1637.

Title: Fluorescent Quenching Detection Reagents and Methods

U.S. Application No. 09/876,830

Confirmation No. 8679

Filing Date June 6, 2001

From Epoch Biosciences (assignee).

If there is a problem with this transmission, please contact Ms. Terri Lowe at 425-482-5555.

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PATENT

I hereby certify that on the date specified below, this correspondence is being deposited with the United States Postal Service as first-class mail in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

October 20, 2003  
Date

*Dan Parker*

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

**OFFICIAL**

Applicants : Michael W. Reed, Eugeny A. Lukhtanov, Alexander A. Gall,  
Robert O. Dempcy, Nicolaas M. J. Vermeulen, and  
Yevgeniy S. Belousov

Application No. : 09/876,830

Confirmation No. : 8679

Filed : June 6, 2001

Title : FLUORESCENT QUENCHING DETECTION REAGENTS  
AND METHODS

Examiner : Jezia Riley

Art Unit : 1637

Docket No. : 290097.405

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Reply

Commissioner for Patents:

In response to the Office Action dated July 22, 2003 in the above-identified application as indicated below, please consider the following remarks:

Remarks begin on page 2 of this paper.

U.S. Application No.: 09/876,830  
Reply dated October 20, 2003  
Reply to Office Action of July 22, 2003

### REMARKS

The Office Action dated July 22, 2003, examined claims 27-29, 32-38 and 41-64, finding claims 27, 32-36, 41-43, 48-57, 62 and 63 in condition for allowance. However, claims 28-29, 37, 38, 44, 46, 58-61 and 64 are rejected, and claims 45 and 47 are objected to, for the reasons set forth in the Office Action. These rejection(s) and objection(s) are respectfully traversed for the following reasons.

#### **Claims Rejections – 35 USC §112**

Claims 37, 38 and 58-61 stand rejected under 35 USC § 112, second paragraph, for failing to particularly point out and distinctly claim the invention. More specifically, the Examiner states that claims 37-38 recite that Ar<sup>1</sup> or Ar<sup>2</sup> is indirectly substituted with Ar<sup>3</sup>; however it is unclear what is Ar<sup>3</sup> since there is not a definition of said moiety in the claims.

In reply, Applicants wish to explain that Ar<sup>3</sup> is a designation used to refer to an aryl group, where the designations Ar<sup>1</sup> and Ar<sup>2</sup> are also being used to refer to aryl groups. The term "aryl" is defined in Applicants' specification at, e.g., page 16, line 25 to page 17 line 23, as follows, where a particularly relevant portion of this text has been underlined:

The term "aryl" means a monovalent or bivalent (e.g., arylene) monocyclic or bicyclic aromatic hydrocarbon radical of 6 to 10 ring atoms which is unsubstituted or substituted independently with one to four substituents, preferably one, two, or three substituents selected from those groups provided below. The term "aryl" is also meant to include those groups described above wherein one or more heteroatoms or heteroatom functional groups have replaced a ring carbon, while retaining aromatic properties, e.g., pyridyl, quinolinyl, quinazolinyl, thienyl, and the like. More specifically the term aryl includes, but is not limited to, phenyl, 1-naphthyl, 2-naphthyl, thienyl and benzothiazolyl, and the substituted forms thereof.

U.S. Application No.: 09/876,830  
 Reply dated October 20, 2003  
 Reply to Office Action of July 22, 2003

Substituents for the aryl groups are varied and are selected from: -halogen, -OR', OC(O)R', NR'R'', -SR', -R', -CN, -NO<sub>2</sub>, -CO<sub>2</sub>R', -CONR'R'', -C(O)R', -OC(O)NR'R'', -NR''C(O)R', -NR''C(O)<sub>2</sub>R', -NR'-C(O)NR''R''', -NH-C(NH<sub>2</sub>)=NH, -NR'C(NH<sub>2</sub>)=NH, -NH-C(NH<sub>2</sub>)=NR', -S(O)R', -S(O)<sub>2</sub>R', -S(O)<sub>2</sub>NR'R'', -N<sub>3</sub>, -CH(Ph)<sub>2</sub>, perfluoro(C<sub>1</sub>-C<sub>4</sub>)alkoxy, and perfluoro(C<sub>1</sub>-C<sub>4</sub>)alkyl, in a number ranging from zero to the total number of open valences on the aromatic ring system; and where R', R'' and R''' are independently selected from hydrogen, (C<sub>1</sub>-C<sub>8</sub>)alkyl and heteroalkyl, unsubstituted aryl and heteroaryl, (unsubstituted aryl)-(C<sub>1</sub>-C<sub>4</sub>)alkyl, and (unsubstituted aryl)oxy-(C<sub>1</sub>-C<sub>4</sub>)alkyl.

Two of the substituents on adjacent atoms of the aryl or heteroaryl ring may optionally be replaced with a substituent of the formula -T-C(O)-(CH<sub>2</sub>)<sub>q</sub>-U-, wherein T and U are independently -NH-, -O-, -CH<sub>2</sub>- or a single bond, and q is an integer of from 0 to 2. Alternatively, two of the substituents on adjacent atoms of the aryl or heteroaryl ring may optionally be replaced with a substituent of the formula -A-(CH<sub>2</sub>)<sub>r</sub>-B-, wherein A and B are independently -CH<sub>2</sub>-, -O-, -NH-, -S-, -S(O)-, -S(O)<sub>2</sub>-, -S(O)<sub>2</sub>NR'- or a single bond, and r is an integer of from 1 to 3. One of the single bonds of the new ring so formed may optionally be replaced with a double bond. Alternatively, two of the substituents on adjacent atoms of the aryl or heteroaryl ring may optionally be replaced with a substituent of the formula -(CH<sub>2</sub>)<sub>s</sub>-X-(CH<sub>2</sub>)<sub>t</sub>-, where s and t are independently integers of from 0 to 3, and X is -O-, -NR'-, -S-, -S(O)-, -S(O)<sub>2</sub>-, or -S(O)<sub>2</sub>NR'-. The substituent R' in -NR'- and -S(O)<sub>2</sub>NR'- is selected from hydrogen or unsubstituted (C<sub>1</sub>-C<sub>6</sub>)alkyl. Still further, one of the aryl rings (Ar<sup>1</sup> and Ar<sup>2</sup>, below) can be further substituted with another substituted aryl group to extend the resonance ability of the aromatic system, directly or indirectly through groups such as -(CR'=CR')<sub>n</sub>- and -(C≡C)<sub>n</sub>-, where n is 0 to 5, increasing the wavelength absorbance maximum.

The underlined text refers to "another substituted aryl group" without providing a convenient shorthand nomenclature that may be used to refer to this "other substituted aryl group". In the claims, Applicants have adopted the Ar<sup>3</sup> nomenclature to refer to this other substituted aryl group.

In view of these comments, reconsideration and withdrawal of the rejection are respectfully requested.

U.S. Application No.: 09/876,830  
Reply dated October 20, 2003  
Reply to Office Action of July 22, 2003

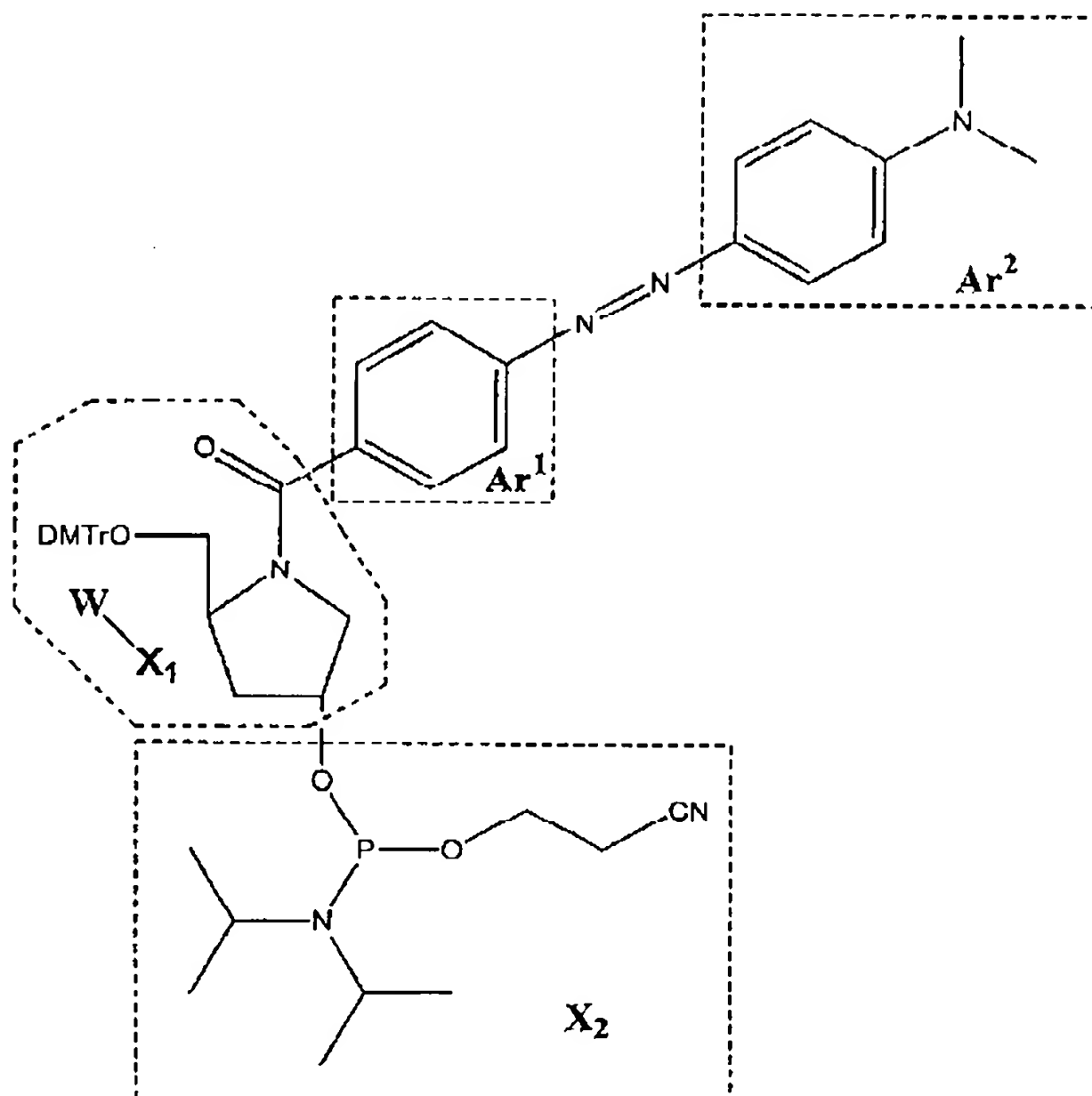
### **Claim Rejections – 35 USC § 102**

Claims 28-29, 44, 46 and 64 are rejected under 35 USC § 102(e) as being anticipated by Pitner et al. (U. S. Patent 6,114,518). This rejection is respectfully traversed for the following reason.

Pitner et al. has been cited as disclosing labeled phosphoramidite compositions comprising a linking group W attached to a phosphoramidite group which is viewed to be inclusive of the instant invention where  $X_2$  is a phosphorous composition and  $X_1$  is H. Applicants note that the filing date of Pitner et al.'s application is September 30, 1999, and the issue date of the Pitner et al. patent is September 5, 2000.

In reply to this rejection, Applicants respectfully submit a Declaration under 37 CFR § 1.131 from one of the named co-Inventors, namely Eugene Lukhtanov. Mr. Lukhtanov's Declaration and the Exhibit attached thereto, provide evidence that prior to September 30, 1999, Applicants were in possession of a labeled phosphoramidite composition comprising a linking group W attached to a phosphoramidite group which is viewed to be inclusive of the instant invention where  $X_2$  is a phosphorous composition and  $X_1$  is H. More specifically, the laboratory notebook record provided as an Exhibit to Mr. Lukhtanov's Declaration shows the preparation of a labeled phosphoramidite composition comprising a linking group W attached to a phosphoramidite group according to the instant invention where  $X_2$  is a phosphorous composition and  $X_1$  is H. The chemical structure from this notebook record is shown on the following page in annotated form, to clarify the relationship between the chemical structure and the nomenclature used in the pending claims.

U.S. Application No.: 09/876,830  
Reply dated October 20, 2003  
Reply to Office Action of July 22, 2003



In view of these remarks, the Declaration and the Exhibit, Applicants respectfully assert that they had possession of the subject matter for which Pitner et al. has been cited, prior to the filing date of the Pitner et al. application. Accordingly, reconsideration and withdrawal of the rejection under 35 U.S.C. 102(e) are respectfully requested.

U.S. Application No.: 09/876,830  
Reply dated October 20, 2003  
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### Claim Objection

The Office Action indicates that claims 45 and 47 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. In reply, Applicants respectfully contend that the independent claims from which claims 45 and 47 depend are patentable for the reasons set forth above, and accordingly claims 45 and 47 are likewise patentable.

Should any issue require attention prior to allowance, the Examiner is requested to contact the undersigned at (425) 482-5153 to resolve the matter.

Respectfully submitted,



David W. Parker  
Registration No. 37,414

### Enclosures:

Postcard  
Declaration under 37 C.F.R. § 1.131  
Exhibit

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